

A Division of Transnet SOC Limited

# **RAIL NETWORK**

# ELECTRICAL DEPARTMENT SPECIFICATION

# SECONDARY INJECTION TEST SET

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Date:

26/08/2024

Circulation Restricted To:

Transnet Freight Rail - Infrastructure

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#### 1. GENERAL REQUIREMENTS

- 1.1. This specification outlines Transnet Freight Rail's requirements for the supply and delivery of a secondary voltage and current injection set (TESSET 502B or similar).
- 1.2. The voltage and current secondary injection test set shall be ergonomically designed for maximum operator productivity and safety.
- 1.3. The instrument shall be of robust nature and designed to withstand the rough conditions of the railway environment.

### 2. OPERATING CONDITIONS

2.1. The voltage and current secondary injection test set will be operated in all weather conditions as well as salt laden and industrial atmosphere.

Altitudes:	From sea level to 2000m above sea level.
Relative humidity:	10% to 95%
Atmospheric conditions:	May vary from heavily saline to dry and dusty conditions
Ambient air temperatures:	-10º C to 50º C. (daily average +30°C)

#### 3. PERFORMANCE REQUIREMENTS

- 3.1. The actual design and service life of the voltage and current secondary injection test set is to be stated.
- 3.2. The voltage and current secondary injection test set is to be easily and economically maintained with standard workshop/calibration tools and equipment.

#### 4. TECHNICAL REQUIREMENTS

#### 4.1. General Description

- 4.1.1. A heavy duty, portable and digital display voltage and current secondary injection test set capable of testing switchgear, motors, generators, transformers, protection relays, trip coils, under voltage relays, CT's and VT's.
- 4.1.2. The voltage and current secondary injection test set will be used for a wide range of tests: from simple spot checks, relay injection to timed tests.
- 4.1.3. The equipment must come in a lockable case capable of storing all accessories furnished with the device.

# 4.2. Operational requirements

- 4.2.1. The instrument should have selectable switch for current and voltage ranges both on AC and DC.
- 4.2.2. It should have a set facility when adjusting currents and voltages.
- 4.2.3. It should have built in digital ammeter and should have an accuracy at 0.5% of reading + 3 digits. Linearity should be: 0.05%
- 4.2.4. It should have built in LCD timer that auto rangers: 99,999,999,99 and 9999,9 seconds, accuracy: 1 digit.
- 4.2.5. I should be equipped with a built in LCD voltmeter with accuracy: 0.5% of reading + 2 digits and linearity of : 0.05%.
- 4.2.6. Supplied with all power cables (230V AC cable and a set of long cables to be used for primary injection and the cables must be equipped with suitable heavy duty clamps)
- 4.2.7. It should have robust enclosure and all components shall be housed within one unit.

# 4.3. Power supply requirements

- 4.3.1. Voltage: 230VAC
- 4.3.2. Voltage variation: ± 10%
- 4.3.3. Frequency: 50Hz
- 4.3.4. Frequency variation: ± 3%

# 4.4. Measuring Capability

# 4.4.1. Current inject transformer: voltages and currents.

- Current range: 2A 50A
- Continuous current: 3.5A 50A
- Maximum current: (1min on and 3 min off): 7A 100A; 30sec on and 3 min off): 12A 150A; 10 sec on and 2.5min off): 16A – 200A)

# 4.4.2. Choke Rating: currents.

- Current range: 2A 50A
- Maximum current: 2.6A 65A

# 4.4.3. Auxiliary supply: Voltages and currents.

• AC Voltage range: 0V – 55V – 110V – 220V

- AC current ranges relative to AC voltages: 4A 2A 1A
- DC Voltages: 0 -77V 155V 311V
- DC current ranges relative to DC voltages: 2.0A 1.0A 0.5A

#### 4.4.4. Resistor bank:

- (0.5 ohm 14Amp 100W)
- (1.5 ohm 8Amp 100W)
- (20 ohm 2.2Amp 100W)
- (200 ohm 0.7Amp 100W)
- (2000 ohm 220mA 100W)

#### 4.5. Preferred mass and housing

- 4.5.1. The mass of the unit shall not exceed 30 kg.
- 4.5.2. The housing for the units making up this device shall be of robust construction to sustain heavy duty demands under the service conditions as stated in clause 2 of this specification.

#### 4.6. Data Plate

- 4.6.1. The voltage and current secondary injection test set must come with a data plate.
- 4.6.2. The brand and model number of the insulation tester must clearly shown.
- 4.6.3. The actual weight in kilograms (kg) of the insulation tester must be shown on the machine.
- 4.6.4. The actual dimensions of the insulation tester must be indicated in millimetres (mm).

#### 5. COMPLIANCE AND CERTIFICATION

- 5.1. The secondary injection test set must compliance with relevant national and international standards.
- 5.2. It must be supplied with calibration certificates traceable to national standards.
- 5.3. It must come with a minimum of 1 years warranty where the supplier shall take full responsibility in repairing or replacing the faulty unit and component unless it has been proven to be negligence on the side of the end user.

## 6. TECHNICAL EVALUATION

- 6.1. All bidders shall submitted data sheets with clear pictures of the instrument and its accessories.
- 6.2. Data sheets shall detail relevant technical, operational, functional and other relevant requirements as indicated in the specification. Failure to provide detailed datasheets shall result in the disqualification of the bidder.